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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/089,056	04/03/2002	Arno Lange	220950USOPCT	6861
22850	7590	01/09/2009		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER TOOMER, CEPHIA D	
			ART UNIT	PAPER NUMBER
			1797	
			NOTIFICATION DATE	DELIVERY MODE
			01/09/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/089,056	LANGE ET AL.	
	Examiner	Art Unit	
	Cephia D. Toomer	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 17 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 80,82,88,89 and 93-108 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 80,82,88,89,93-96 and 99-108 is/are rejected.
- 7) ☐ Claim(s) 97 and 98 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office action is in response to the amendment filed October 17, 2008 in which claims 93-108 were added.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 80, 82, 88 and 89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Plonsker (US 3,904,595) in view of Colucci (US 5,634,951).

3. Plonsker teaches a lubricating oil composition comprising a Mannich condensation product. The Mannich product is prepared by reacting a high molecular weight alkylphenol (MW 600-3000), an aliphatic amine (1-20 carbon atoms) and an aliphatic aldehyde (see abstract; col. 1, lines 42-53). The alkylphenols are made by alkylating phenol with a polyisobutene (see col. 1, line 61 through col. 2, lines 1-8). The aliphatic amine may be an n-butylamine (reads on di-n-butylamine) (see col. 2, lines 9-18). The aldehyde may be formaldehyde or a polymer thereof (see col. 2, lines 45-56). The Mannich condensation product is made by merely mixing the alkylphenol, aliphatic amine and aldehyde in the proper ratio and heating the mixture at a temperature from about 50 C (see col. 2, lines 63-67). The condensation reaction may be conducted in mineral oils (see col. 2, line 68 through col. 3, lines 1-5). Plonsker teaches the limitations of the claims other than the differences that are discussed below.

Plonsker is silent with respect to the polydispersity of the polyisobutene and to the phenol being 2-methyl phenol (cresol). However, Colucci teaches these differences.

Colucci teaches a fuel additive comprising a Mannich condensation product (see abstract). Colucci teaches that the polybutylene substituent has a polydispersity in the range of about 1 to about 4 and is highly reactive (see col. 2, lines 8-14, 64 through col. 3, lines 1-10). Colucci also teaches that the Mannich product may be made from high molecular weight alkyl-substituted derivatives of cresol (2-methyl phenol) (col. 3, lines 21-28).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a highly reactive polybutene having a polydispersity of less than 3 because Colucci teaches that these are conventional reactants used to prepare Mannich condensation products. It should be noted that the Mannich condensation product of Colucci is used in combination with a liquid carrier, such as the mineral oils disclosed in Plonsker (see col. 5, lines 18-30).

With respect to claim 82, Plonsker and Colucci do not specifically set forth the claimed adducts; however, it would be reasonable to expect that the claimed adducts would form, especially in view of Plonsker and Colucci teaching preparing a Mannich condensation product using similar reactants.

4. Claims 93-96, and 99-100 rejected under 35 U.S.C. 103(a) as being unpatentable over Malfer (US 5,725,612) in view of Cherpeck (US 5,300,701) and Baxter (US 6,562,913).

Malfer teaches a fuel composition comprising Mannich condensation products formed from (i) one mole part of at least one substituted hydroxyaromatic compound having on the ring both (a) an aliphatic hydrocarbyl substituent derived from a polyolefin having a number average molecular weight in the range of about 500 to about 3000, and (b) a C.sub.1-4 alkyl; (ii) from 0.8 to 1.5 mole part(s) of aliphatic polyamine having one and only one primary or secondary amino group in the molecule capable of participating in the Mannich condensation reaction; and (iii) from 0.8 to 1.3 mole part(s) of aldehyde, provided that the mole ratio of aldehyde to amine is 1.2:1 or less. Carrier fluids further enhance the effectiveness of these Mannich condensation products in minimizing or reducing intake valve deposits and/or intake valve sticking (see abstract; col. 3, lines 1-25). The hydrocarbyl substituents may be polyisobutylene of the co called high reactivity polybutenes having a terminal vinylidene group of at least 70% (see col. 3, lines 26-52). The amine reactants are alkylene polyamines having a single suitably reactive primary or secondary amino group in the molecule and is preferably N,N-dimethyl-1,3-propanediamine (see col. 4, lines 23-55). The aldehyde is preferably formaldehyde (see col. 5, lines 8-9). The carrier fluids include lubricating oils (see col. 5, lines 46-59). Malfer prepares the fuel additive as a concentrate wherein the concentrate comprises the Mannich products and the carrier fluid (lubricating oils) (see col. 8, lines 14-35). Malfer teaches the limitations of the claims other than the differences that are discussed below.

In first aspect, Malfer differs from the claims in that he does not specifically teach that alkyl group is highly reactive PIB having a polydispersity of less than 3.0. However, Cherpeck and Baxter teach this difference.

Cherpeck teaches a process for the preparation of PIB substituted phenolic compound wherein the phenolic compound is alkylated in the presence of an acid catalyst (see abstract). The PIB has a number average molecular weight of 300-5000 and contains at least about 70% methylvinylidene (highly reactive) (see col. 2, lines 37-49). Cherpeck teaches that these PIB compounds are the commercial product ULTRAVIS-10 (molecular weight 950) (see Example 1).

Baxter teaches that highly reactive PIB such as ULTRAVIS possess a polydispersity of no more than 2.0 (see col. 4, lines 12-29, 54-58).

It would have been obvious to one of ordinary skill in the art to have replaced the highly reactive polybutene of Malfer with a highly reactive polybutene possessing a polydispersity of less than 3.0 because Cherpeck teaches that employing such a polybutene provides the desired PIB-phenol in significantly higher yield than employing conventional PIB having minor amounts of methylvinylidene and phenols exhibit minimal molecular weight degradation (see col. 4, lines 19-57).

In the second aspect, Malfer differs from the claims in that he does not specifically teach the adduct mixture of claim 95. However, no unobviousness is seen in this difference because Malfer, Cherpeck and Baxter teach a PIB-substituted

phenol that appears to meet the claimed limitations and they teach the same amine and aldehyde reactants. Malfer reacts the components in the same manner as Applicant.

Therefore,

it would be reasonable to expect that the adducts of claim 95 would be within the scope of Malfer, Cherpeck and Baxter, absent evidence to the contrary.

5. Applicant's arguments have been fully considered but they are not persuasive.

Applicant argues Plonsker does not teach di-n-butylamines, but n-butylamines.

Plonsker teaches that the amine can be any aliphatic amine containing at least one >NH group and 1 to 20 carbon atoms. The examiner agrees that Plonsker does not specifically teach di-n-butylamine, but Plonsker clearly recognizes that such compounds are within the scope of his invention because of the teachings above. Furthermore, Plonsker teaches other dialkylamines and this further suggests to the skilled artisan that di-n-butylamine would be a possible amine suitable for use in the invention. It should be noted that claim 82 is claiming "an n-butylamine", which may be a monobutylamine.

Applicant arguments with respect to Colucci and claims 93 and dependents are moot in view of Malfer, and that those claims were never rejected over Colucci. Malfer teaches alkylating a phenol with a highly reactive polyisobutene having a vinylidene double bond content of more than 70 mol%.

Applicant argues that the use of highly reactive polyisobutene having a vinylidene double bond content of more than 70 mol% having a molecular weight range of from 300-850 produces unexpected results.

The examiner has reviewed the data and has come to the conclusion that the showings are not commensurate in scope with the claims and the results are not unexpected. The amine is limited to methylamine whereas the claims are directed to amines having at least one primary or at least one secondary amino function. That is a large number of compounds and the use of just methylamine is not sufficient to show alleged unexpected results over the entire claimed range. Also, Malfer teaches Mannich products wherein highly reactive polyisobutenes having a vinylidene double bond content of more than 70 mol% are used.

6. Claims 97 and 98 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art fails to teach or suggest fractionating the reaction mixture.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cephia D. Toomer whose telephone number is 571-272-1126. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Cephia D. Toomer/
Primary Examiner
Art Unit 1797

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